

**BIOREMEDIATION OF IMIDACLOPRID UNDER DIFFERENT ENVIRONMENTAL
CONDITIONS: TOXICITY ASSESSMENT AND METAGENOMICS**



Thesis submitted in partial fulfillment for the Award of Degree

DOCTOR OF PHILOSOPHY

by

Sonam

DEPARTMENT OF CIVIL ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY

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Dedicated to my

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LIST OF FIGURES

Figure 1.1: Agrochemicals used for enhancement of agricultural production	2
Figure 1.2: Consumption of chemical pesticides and biopesticides in recent years	7
Figure 1.3: State-wise pesticide consumption in India	8
Figure 1.4: Fate of pesticides in the environment	11
Figure 2.1: Bioremediation techniques	21
Figure 3.1: Map of sampling site	48
Figure 3.2: Schematic representation of stirred tank batch bioreactor	51
Figure 3.3: The sets of sterilized and unsterilized soil samples for microcosm study	53
Figure 4.1: Phylogenetic tree of <i>Teipidibacillus decaturensis</i> strain ST1	67
Figure 4.2: Phylogenetic tree of <i>Klebsiella variicola</i> strain ST3	67
Figure 4.3: Phylogenetic tree of <i>Brevibacillus borstelensis</i> ST4.....	68
Figure 4.4: Phylogenetic tree of <i>Bacillus licheniformis</i> ST5	68
Figure 4.5: Imidacloprid biodegradation at 50 ppm	70
Figure 4.6: Imidacloprid biodegradation at 100 ppm	71
Figure 4.7: Imidacloprid biodegradation at 150 ppm	72
Figure 4.8: Imidacloprid biodegradation at 200 ppm	73
Figure 4.9: Imidacloprid biodegradation at 250 ppm	74
Figure 4.10: Imidacloprid biodegradation at 300 ppm	75
Figure 4.11: Effect of pH on bacteria	76

Figure 4.12: Effect of temperature on bacteria	78
Figure 4.13: Effect of shaking speed on bacteria	79
Figure 4.14: Growth of biomass with time	81
Figure 4.15: Experimental and predicted data plot fitted by various models	83
Figure 4.16: Reduction in BOD after biodegradation	87
Figure 4.17: Reduction in COD after biodegradation	88
Figure 4.18: Percentage reduction in TOC after biodegradation	89
Figure 5.1: Anti-oxidative enzyme assay for catalase	99
Figure 5.2: Anti-oxidative enzyme assay for peroxidase	100
Figure 5.3: Anti-oxidative enzyme assay for superoxide dismutase	101
Figure 5.4: Effects of imidacloprid on photosynthetic pigment contents in the leaves of <i>Cicer arietinum</i>	103
Figure 5.5: Acute bioluminescence intensities for samples T1, T2, T3 and T4	104
Figure 5.6: Chronic bioluminescence intensities for samples T1, T2, T3 and T4	105
Figure 5.7: Cell toxicity studies of T1, T2, T3 and T4 on L929-RFP (mouse fibroblast cells) for 48 h of incubation and MMT assay in a 96-well microtiter plate	107
Figure 5.8: Fluorescence microscopy photographs of the L929-RFP (mouse fibroblast) cells after treatment with samples T1, T2, T3 and T4	109
Figure 6.1: Biodegradation of imidacloprid in slurry	113
Figure 6.2: Degradation pattern of imidacloprid with time in sterilized soil in Set 1, Set 2, Set 3, and Set 4	115
Figure 6.3: Degradation pattern of imidacloprid with time in unsterilized soil in Set 1, Set 2, Set 3, and Set 4	116

Figure 6.4: Half-life of imidacloprid in different soil samples	117
Figure 6.5: Mass spectral profile of metabolites formed during the degradation of imidacloprid	119
Figure 6.6: First-order kinetics plot of imidacloprid bioremediation	120
Figure 6.7: Second-order kinetics plot of imidacloprid bioremediation.....	121
Figure 7.1: GC content of the sequences	128
Figure 7.2: Library size overview of all the samples	129
Figure 7.3: Dendrogram representing similarity among the samples	130
Figure 7.4: Heatmap depicting the Core microbiome at order level	131
Figure 7.5: 10 most abundant genus present in Sample 1.....	132
Figure 7.6: 10 most abundant genus present in Sample 2.....	133
Figure 7.7: 10 most abundant genus present in Sample 3.....	133
Figure 7.8: Venn diagram representing a relation between the genus present across all the samples	134
Figure 7.9: Variation in Sample 1-16S, Sample 2-16S and Sample 3-16S at phylum level.....	135
Figure 8.1: Imidacloprid degradation by lyophilized and encapsulated bacteria	145
Figure 8.2: Imidacloprid degradation by lyophilized bacteria with time	146
Figure 8.3: Biodegradation of imidacloprid in soil microcosm using lyophilized and encapsulated bacteria	147

LIST OF TABLES

Table 1.1: Classification of pesticides based on the target pest, chemical composition, mode of action and mode of entry	4
Table 1.2: Physico-chemical properties of Imidacloprid	9
Table 2.1: Studies conducted on optimization of environmental conditions for imidacloprid biodegradation	28
Table 2.2: Microorganisms used for biodegradation of imidacloprid	32
Table 2.3: Studies conducted on metagenomic analysis of insecticide biodegradation	37
Table 4.1: Degradation of imidacloprid before and after optimization of environmental conditions.....	80
Table 4.2: Kinetic models to illustrate imidacloprid biodegradation kinetics using the consortium	82
Table 4.3: Biokinetic parameters for imidacloprid biodegradation by bacterial consortium	84
Table 5.1: Plant parameters examined during germination assay	93
Table 5.2: The plant parameters examined during pot experiments at different concentrations of imidacloprid	95
Table 5.3: Values of various parameters of Cicer arietinum plant obtained at different concentrations of imidacloprid	96
Table 5.4: Stress tolerance index in case of roots and shoots calculated at different concentrations of imidacloprid	97
Table 5.5: Bioluminescence inhibition for acute and chronic toxicity	106

Table 6.1: % degradation of imidacloprid in sterile and unsterile soils in Set 1, Set 2, Set 3 and Set 4	114
Table 6.2: Retention times and major mass spectral peaks of identified metabolites.....	118
Table 6.3: First-order kinetic parameters	122
Table 7.1: Sample details for V3-V4 amplicon region	128
Table 7.2: Pathways predicted by KEGG	136

LIST OF ABBREVIATIONS

SOM	Soil Organic Matter
DDT	Dichlorodiphenyltrichloroethane
HCH	Hexachlorocyclohexane
NB	Nutrient Broth
NAM	Nutrient Agar Media
MSM	Mineral Salt Media
LB media	Luria-Bertani Media
DMEM	Dulbecco's Modified Eagle Medium
FBS	Fetal Bovine Serum
TE buffer	Tris-EDTA Buffer
TAE buffer	Tris-acetate-EDTA Buffer
EDTA	Ethylenediamine Tetraacetic Acid
OD	Optical Density
CFU	Colony Forming Units
TOC	Total Organic Carbon
NDIR	Non-Dispersive Infrared
DO	Dissolved Oxygen
ThOD	Theoretical Oxygen Demand
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
HPLC	High-Performance Liquid Chromatography

GC-MS	Gas Chromatography-Mass Spectrometry
PCR	Polymerase Chain Reaction
NCBI	National Center for Biotechnology Information
MEGA	Molecular Evolutionary Genetics Analysis
rRNA	Ribosomal Ribonucleic Acid
BLAST	Basic Local Alignment Search Tool
ROS	Reactive Oxygen Species
S%	Survival Percentage
G%	Seed Germination Percentage
SL	Shoot Length
RL	Root Length
RSL ratio	Root-Shoot Length Ratio
P%	Percentage Phytotoxicity
SVI	Seedling Vigor Index
TI	Tolerance Index
STI	Stress Tolerance Index
CAT	Catalase
POD	Peroxidase
SOD	Superoxide Dismutase
ANOVA	Analysis of Variance
NCMR	National Centre for Microbial Resource
FMN	Flavin Mononucleotide
IGIB	Institute of Genomics and Integrative Biology

A-T	Adenine-Thymine
RFP	Red Fluorescent Protein
MTT	3-(4, 5-dimethylthiazolyl-2)-2, 5-diphenyltetrazolium bromide
DMSO	Dimethylsulfoxide
DAPI	4',6-diamidino-2-phenylindole
FAS	Ferrous ammonium sulfate
6-CNA	6-chloronicotinic acid
OTU	Operational Taxonomic Unit
KEGG	Kyoto Encyclopedia of Genes and Genomes